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ABSTRACT

The study was designed to determine if there exists a significant difference in the right-left labeling ability of 15 learning disabled students as compared to 15 regular classroom students at the fourth grade level. Ss were tested for lateral awareness and directionality. Results supported the hypothesis that there exists a significant difference between learning disabled and regular classroom students in the areas of lateral awareness and directionality. It is concluded that children who exhibit difficulty with right-left labeling ability do not exhibit academically specific symptoms but rather can exhibit any combination of academic and nonacademic symptoms. (SBH)

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A Comparison of the Performance of Learning Disabled Students and Regular Classroom Students in the Areas of Lateral Awareness and Directionality

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Many of the characteristics used by neurologists and neuropsychologists to describe patients with known lesions in particular areas of the brain are quite similar to those characteristics exhibited by children with learning disabilities. This statement is supported by the fact that, until recently, the term minimum brain damaged (MBD) was used in many areas of the country to describe children with specific learning disabilities.

Luria (1973) mentions that patients with lesions of the "inferior parietal and parieto-occipital zones of the cortex do not give rise to modality - specific disturbances(vision, hearing and tactile and kinaesthetic sensation remain completely intact in these cases). However, analysis shows that patients with lesions of these zones develop very marked disorders of the reception and analysis of information" (p. 148).

Luria (1973) notes that the parietal regions are unique to man and mature later than other regions. He further states that "patients with such lesions experience difficulty in grasping the information which they receive as a whole; they cannot fit together the individual elements of incoming impressions in a single structure; they cannot convert the consecutive presentation of the elements of a situation into the new quality of simultaneous perceptibility; they can no longer find their bearings in space and their attempt to do so is converted into a series of disconnected and fragmentary attempts at orientation. However,

we must add one characteristic feature to the description of these defects. . . Patients with lesions of the parietal-occipital region can no longer find their bearings within a system of spatial coordinates and, in particular, they can no longer distinguish correctly between right and left. (pp. 149-150)

Right - left labeling ability should not be confused with handedness, mixed dominance, lateral dominance. While the latter are designed primarily to describe "use of" the former is designed to describe "knowledge of." This labeling ability is a higher cognitive function that contains within it different constructs. (Lockavitch 1978) Two such constructs are lateral awareness and directionality.

Lateral awareness describes the child's ability to label the body's spatial coordinates and to understand how other persons and/or objects relate to self, in terms of left and right. Directionality involves the child's understanding of how persons and/or objects other than self relate to each other in terms of left and right. Research has shown that these two constructs operate independently of each other and that a variance of one cannot account for a variance in the other. (Lockavitch 1977)

The major purpose of this study was to determine if there exists a significant difference in the right-left labeling ability of learning disabled student as compared to those in the regular classroom. More specifically, the study is designed to test the following hypothesis:

1. that there exists a significant difference between learning disabled and regular classroom students in the area of lateral awareness.

2. that there exists a significant difference between learning disabled and regular classroom students in the area of directionality.

Population

The population consisted of 15 learning disabled and fifteen regular classroom students at the fourth grade level. Students were matched according to age, socio-economic background and intelligence. All the students came from the same urban school system.

Criteria for acceptance into the school system's learning disabilities program was based on: an uneven psychological profile, normal or above average intelligence and poor academic performance. A sample of the measuring instruments used for program entry include: the WISC, Stanford Binet, Wide Range Achievement and others.

Inclusion into the study's regular classroom group was based on the results of academic achievement tests, actual classroom performance and regular classroom teacher rating and recommendation. Special attention was given to selecting students who were actually performing at their expected grade level in the basic academic areas (reading, mathematics, etc.). Children who were functioning at extremes (either too high or too low) were excluded from this group. This selection procedure was suggested by Harris (1957) when he states that: . . . at age seven the most striking differences between reading

disability and unselected groups are higher proportions of the reading cases who show confusion in identifying left and right . . . These factors can be interpreted as showing the presence of directional confusion . . . The significance of the positive findings in this study would probably been more striking if children with reading problems had been eliminated from the selected." (p. 253)

TEST ADMINISTRATION AND PROCEDURES

The [redacted] Test for Lateral Awareness and Directionality ([redacted]LAD) was administered to each child in the study.

The [redacted]LAD was developed to meet the need for a measuring instrument that will adequately assess both lateral awareness and directionality. It is designed so that it can be given in either a group or individual assessment situation and represents in two-dimensions what has traditionally been a three dimensional inventory. It is composed of two subtests:

1. Lateral Awareness: the examinee relates the drawing directly to his own position.
2. Directionality: the examinee first assumes the position of one of the people or objects in the drawing.

[redacted]LAD will yield three scores: one for each subtest and total score. All items are read to the students and there is no limit to the number of times the student can have a question repeated.

The Lateral Awareness subtest has fifteen items in it while the Directionality subtest has twenty. There are no items shared by both subtests. Figure 1 and 2 are examples of Lateral Awareness and Directionality items respectively.

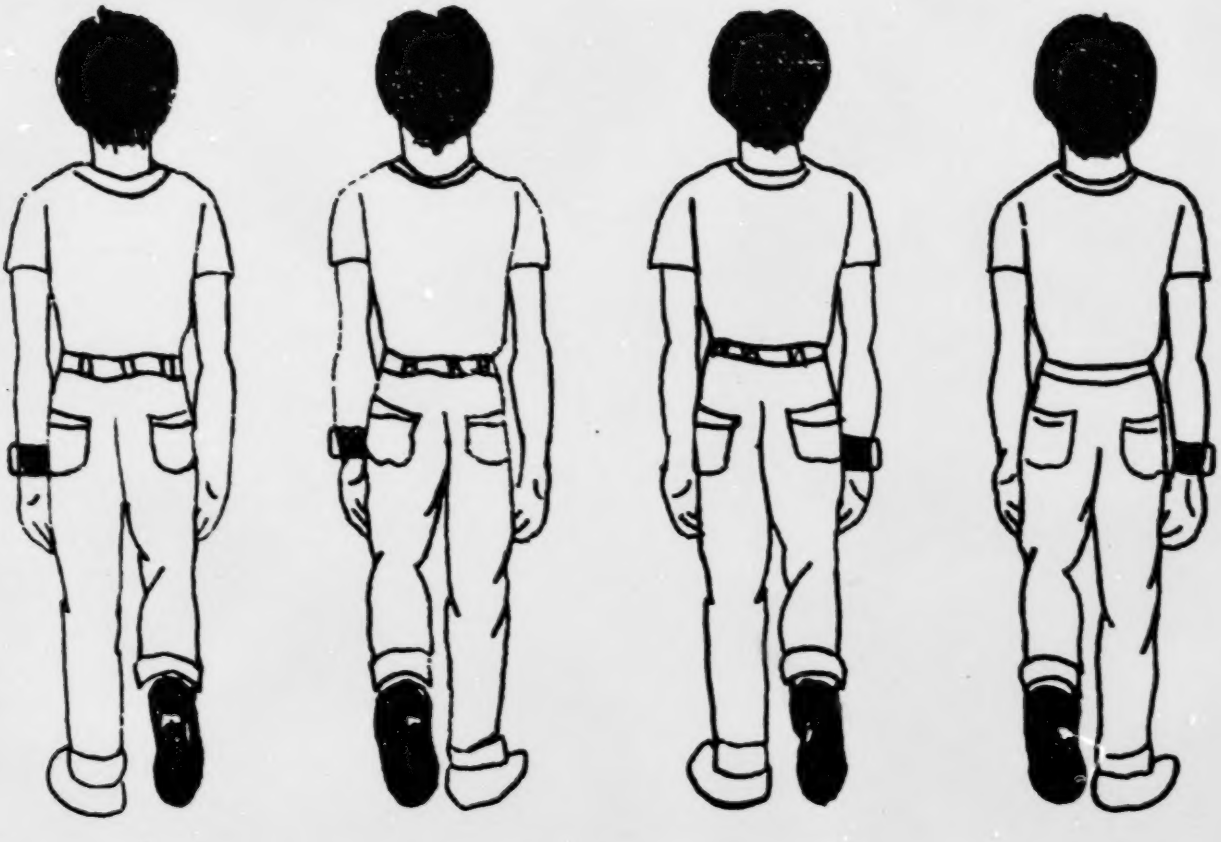

Figure I Lateral Awareness Item - The Examinee is asked to mark the picture of the boy who has his right foot raised and his watch on his left arm.

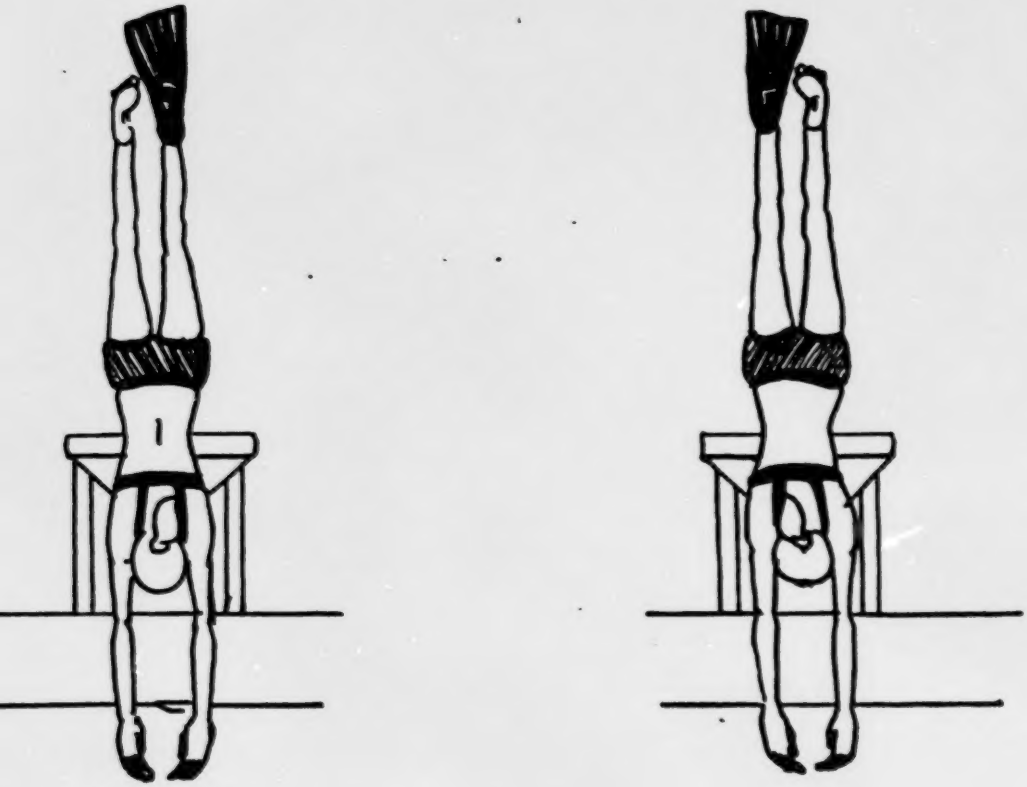

Figure 2 Directionality Item - The examinee is asked to mark the picture of the diver who has the flipper on her left foot.

TABLE I of the T-Values Comparing
a Difference Between the Mean Lateral Awareness
Directionality, Total [redacted]LAD Achieved
by the Learning Disabled and Regular
Classroom Fourth Graders

		NORMAL	
	LAT	DIR.	TOTAL LTLAD
LD			
LATERAL	2.86**		
DIRECTIONALITY		3.81***	
TOTAL			5.71***

** $p < .01$

*** $p < .001$

LTLAD has been shown to be a valid and reliable measuring instrument for elementary school children yielding reliability coefficients of .88, .95 and .93 respectively for the Lateral Awareness, Directionality subtests and the total LTLAD score (Lockavitch 1977).

Results

As Table I indicates there was a significant difference between the mean scores achieved by the learning disabled students and the mean scores achieved by the regular classroom students on all three LTLAD test scores. Such differences occurred at the .01 level of significance for the Lateral Awareness subtest and the .001 level of significance for the directionality subtest and the total LTLAD score.

Discussion

The results of this study support the hypotheses that there exists a significant difference between learning disabled and regular classroom students in the areas of lateral awareness and directionality.

Luria (1973) has stated that the parietal regions are one of the last areas in the brain to become fully operational and sets as approximately seven years old the time when such areas become functional. He mentions that housed in this area(the parietal-occipital region) is the ability to distinguish correctly between right and left; and notes that patients who have known lesions in this area and lose this ability to distinguish right and left, can no longer:

1. find their bearings within a system of spatial coordinates
2. read due to spatial confusions
3. understand "logical-grammatical" structures

4. perform certain mathematical computations

5. tell time by the positions of the hands on the clock

6. draw letters

7. use a map

It is interesting to note the striking similarities between the characteristics used by Luria to describe his patients and the characteristics used to describe children with specific learning disabilities.

At this point it must be noted that what is not being suggested is that children with specific learning disabilities on the basis of such characteristic similarities are suffering from brain injury. It must be remembered that Luria and others like him work with individuals who had these specific skills and due to known lesion, lost them. Children with specific learning disabilities are having difficulty in acquistion and storage of these particular skills.

What is being suggested is that it is possible that this difficulty centers on the fact that due to a maturational lag, children with specific learning disabilities require a longer period of time for the parietal regions to become fully operational and that their problem rather than being exclusively one of acquisition might involve storage as well.

It is recommended that a closer look be given to not only the academic tasks being presented to these children, but to the pre-requisites required for successful mastery of such tasks. Children who exhibit difficulty with right-left labeling ability do not exhibit academically specific symptoms (they do not all have reading problems, or all have math problems) but rather can exhibit any combination of academic and non-academic

symptoms. Answers to what specific type of academic symptoms are unique to this area of difficulty must be answered in future research.

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